

# RESOURCES

Some findings and conjectures from recent research into resource development and use

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*Let us not underrate the value of a fact; it will one day flower into a truth.*—HENRY DAVID THOREAU

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## *The Rush to Build Below the Flood Marks: Two Reports*

“THE FLOOD,” WJ McGee observed in 1891, after a one-man survey of flood plains in the Mississippi Basin and across the nation, “remains a hardly-appreciated obstacle to progress. Indeed, as population has increased, men have not only failed to devise means of suppressing or escaping this evil, but have, with singular short-sightedness, rushed into its chosen path.”

A natural scientist of unlimited range, his given name was William John; but he always signed himself WJ, without the periods; he simply wanted it that way. McGee, as Gifford Pinchot testifies in his memoirs, operated as a sort of one-man Brain Trust in setting up the Inland Waterways Commission in 1907. “It would be interesting,” McGee reflected in his paper on Flood Plains, sixty-eight years ago, “to determine the relative density of population upon the riparian lowlands, not only within the Mississippi Valley but throughout the United States.” But like many a research man before and since, “the data are inadequate,” he concluded.

By devices such as aerial photography and more precise techniques in the enumeration of “structural units” on the ground, a group of six men headed by Gilbert F. White at the University of Chicago find present-day data not so much inadequate as ill-related and confused. The complete findings are presented in a book,

*Changes in Urban Occupance of Flood Plains of the United States*, published in December by the University of Chicago’s Department of Geography.

THE GIST of the findings is that, despite the \$4 billion spent to reduce danger from flood in the twenty-one years since 1936, “mean annual flood losses increased over the period of record and at a rate that has not declined notably since 1936. The forces influencing urban enterprises are incapable of prolonged pessimism, even where catastrophic loss has been experienced.”



Unwittingly, or “against its inclinations, the Army Corps of Engineers is . . . one of the major real estate developers in the country.” Even before announced new engineering works are begun, unduly optimistic developers charge into the flood plains and begin raising new structures.

Among McGee’s suggestions for the alleviation of flood damage as “a barely mitigated evil” in like locations three quarters of a century ago, was an admonition to railway builders to lay their tracks so far as possible above the high-water marks of rivers, and build bridges and trestles high. White and his associates now point out that run-down sections of towns bordering rivers are frequent targets for federally sponsored urban renewal programs. Express-

ways in the national network of superhighways seek flood plains as rights of way because the lands are level. But highway systems of such design are likely to attract still further occupancy of potential flood plains, interurban and urban, because of "the increased accessibility they will provide." Housing, trade, and industry are likely to follow them on to the flood plains. So long as new developments do not increase hazards to others and occupants realize the risk, they may be warranted.

McGee reflected in 1891, "The squirrel hides his hoard of nuts a rod from the brink of the advancing railway cut. The field bunting busies herself in building a nest in the stubble, regardless of the approaching turns of the plow. Verily, the short-sighted dumb creatures may find exalted precedents!"



### **MINED COPPER AND SCRAP**

THE RATE OF INCREASE in demand for newly-mined copper has declined since the First World War. One cause of this, as indicated in a forthcoming RFF study of *Changes in the Price and Cost of Copper from 1870 to 1957*, by Orris C. Herfindahl, is the increasing importance of copper recovered from old scrap. Scrap in this sense includes both refined copper and copper recovered in alloys. Another factor in the decline of copper demand has been the decreasing price of aluminum.

Copper recovered from old scrap accounted for 18 per cent of apparent consumption in the United States in 1908-14; 29 per cent in 1919-29; 39 per cent in 1930-39. Since the Second World War, however, in the period 1947-56, old scrap has made up only 26 per cent of the apparent consumption.



## **THE CARS OF KETCHIKAN**

THE NONINDIGENOUS ALASKAN is an urban dweller. He may affect a red and black checked shirt and jeans, just as a Texan may affect a ten-gallon hat and high-heeled boots, but his wife or the public pressures generally insist that he shave every morning, and as likely as not he wears glasses. In 1950 the professions and skilled trades occupations of an urban industrial society accounted for 79 per cent of the white employed. . . .

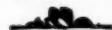
The nonindigenous person in southeast Alaska is not a settler in the usual sense, but at most a sojourner in the Region. . . . Even given opportunities for year-round employment at attractive wages, he still exhibits a restless desire to "return home" after a brief spell. . . . It is difficult for the Ketchikan pulp mill to retain its labor force.

The city had done a good planning job, starting well in advance of the construction of the mill, making plans for new roads, streets and parking space; but its officials were unable to foresee the full impact of the new American motor car. The automobile appears to have become the most prized possession of the highly mobile workers of the United States. So the new Ketchikan resident brought his car along with him just as naturally as he would his family. But there is only a total of twenty-eight miles of narrow roads upon which he can drive out from

Ketchikan, and no connections with any main highway system. . . .

After the influx of the new car-owning workers many of the old residents started making down-payments on the bright-colored, chrome-laden behemoths in response to some hidden prestige- or status-preserving urge, thus adding to traffic and parking snarls and the tax burden. Between 1952 and 1958 the city of Ketchikan (with a population of some 10,000) spent more than six and a half million dollars for street work.

Half the cost was shared by the federal government under the Alaska Public Works program; but assuming that street and road expansion were provided, no matter what the cost, would this take care of adapting to the environment the oversized, overpowered, low-slung American automobile? Hardly. . . . It is doubtful, therefore, that any newcomer to the Region whose way of life is inextricably bound up with the automobile of today can ever be happy in his new environment, because his automobile cannot adapt to it.—George Rogers, *Arctic Institute of North America. From Alaska in Transition, to be published for RFF by The Johns Hopkins Press.*



WE PROBABLY NEED TO FEAR, not the exhaustion of physical resources, but the inadequate or belated utilization of our intellectual resources.—Thomas B. Nolan

## On Rural Reform in Venezuela

**A**CUTE POVERTY in rural areas and riches in cities are the ingredients for revolution. A democratic government, concerned with the welfare of its people, must undertake to help the rural poor. But agricultural colonization is only a part of the program, as is the extension of land reform.

Agriculture is only one part of the total economy. Venezuela must develop a strong, diversified, balanced, efficient economy, both for the near future and for that more distant date when petroleum may not make as large a contribution to the economy as now. . . .

Venezuela is relatively rich—far richer than many other countries in the world. But land alone is not enough for sound agriculture, or for agricultural colonization. . . . Tropical agriculture demands greater managerial skill than temperate zone agriculture. One who cannot read and write, has no understanding of diseases and their control, and is unfamiliar in buying and selling in the market, is severely handicapped in operating a commercial farm; and there seem relatively few intermediate stages between subsistence agriculture and highly technical commercial agriculture in Venezuela.

The solution may lie in working with the ablest men, those not too old, and in training the children. Every possible help should be given to the poor rural people of Venezuela; but it may be no kindness to them, and it surely would be very expensive to the nation, to attempt to give a commercial farm to every poor family. . . .

There are ways of attacking this problem other than by agricultural settlement alone. One means might be a program of small-scale rural public works, much as the United States had in the earliest stages of the New Deal. Rural men might be given four to ten days of work monthly, at modest pay, under locally resident supervisors. One major objective would be to train them to do productive work, of kinds they do not presently know how to do. Even some formal education might be included, espe-



cially in simple arithmetic, reading of simple drawings, and the like. They could build better water supply systems, local roads and paths, local electricity supply systems, schools, and housing.

Housing in cities in Venezuela has been subsidized for low-income people. Why should not housing in rural areas be subsidized? If the nation genuinely desires to keep rural people in rural areas, then it must do at least as much to help them there as it does to help those who have moved to the city. Relatively modest expenditures could bring enormous improvements in rural housing. . . .

Considering agricultural colonization in Venezuela, every one agrees that many mistakes have been made and much money wasted in the past. But the past is of concern only to ascertain the direction it provides for the future. —Marion Clawson, in a *Report of Recommendations Re. Instituto Agrario Nacional, to the Government of Venezuela, following a journey of inquiry early this year.*



## Passages

MAN'S INTEREST in his long destiny in the next world is an old preoccupation; individuals have planned ahead for immediate families, and rulers for dynasties; but the concern of whole nations over what things will be like 25 or 100 years hence is a truly new phenomenon. . . . There are infinite possibilities for error here, from too much imagination as well as from too little. At first glance it might seem that the safest course would be to assume no change from present technology, but with today's rate of technological gain this is

just about the surest way of going wrong. From what was known in 1900, with only a few uncertain horseless carriages on the bad roads, the probable 1950 demand for buggy whips would have looked quite respectable.—*From the Editorial Introduction to Science and Resources, to be published in October by The Johns Hopkins Press.*

THE WHOLE HISTORY of the conservation movement has been an evolution from concern with single resources to realization of their interdependence and of the need for viewing the problem in its entirety. —Paul B. Sears, in *Perspectives on Conservation.*



## THE CHALLENGE OF RESOURCE RESEARCH

**W**HEN THE ENERGY at man's command is limited to his own muscles or to the muscles of domesticated animals, practically all of his time is consumed in getting something to eat and a place in which to live. In India some 90 per cent of the people are engaged in elemental agriculture, which liberates only 10 per cent of the population to do all the things that are necessary for a more comfortable and satisfying life. In the United States where at least 85 per cent of the people are engaged in other activities, accumulation of capital is rapid and more comfortable living a reality.

Consider as an illustration the TVA. At one time gigantic floods did millions of dollars' damage in that area. Then the great Tennessee Valley project harnessed the waters and converted this tremendous energy into electricity.

Then a schoolteacher from Colorado, Harry Curtis by name, went down to the TVA to take over the project of producing calcium metaphosphate from the phosphate rock, making use of this energy. This highly concentrated fertilizer went to the tired soil of the farms; the meadows again began to grow grass; dairy cattle began to feed on the grass; and milk was produced, and the milk went to the children, and the bet-

ter nutrition gave more wide-awake children, healthier children, children more resistant to disease; and this was followed by greater accomplishment in the schools.

WE MUST REMEMBER that the United States today consumes one-half of all the resources that are produced by the Free World. We must also remember that on a world-wide basis today no nation is willing to settle permanently for a standard of living that is lower than that of any other nation. That states the problem briefly.

Considering population pressures, Dr. Willard Libby recently made the statement in dramatic form, that the people now living on the earth constitute five per cent of all the human beings that have ever lived on the face of the earth. It has been computed further that if the world's total production were to be divided among the world's total population the average per capita income would be about \$400 a year—one-fifth of what the citizen of the United States has today.

THE ATTAINMENT of a good life in a world made good depends on an enlargement of our standard of values. God, according to tradition, is found in the lonely and quiet places. Somehow in our educational process, as a part of knowing how to use our resources, we must learn to appreciate nature, to see her through the eyes of one who comprehends the grand strategy of life there represented.

Does it all provide material for graduate study and research? It does. For whom? The answer is given us in terms of the opening remarks of President Newton of this University—"for practically every discipline." That is the challenge. There are basic problems to be solved by the physical scientists, by the social scientists, and by the humanists. There is an abundance of opportunity. The major question is: Are you interested? The answer will depend very largely whether you regard your life as a money investment, or whether you regard it as a part of the great human adventure.—*R. G. Gustavson, in an address at the Western Resources Conference, University of Colorado, July 13, 1959.*



## DR. GUSTAVSON RETURNS TO TEACHING

REUBEN G. GUSTAVSON retired last month as the founding President and Executive Director of Resources for the Future. During the some six years of his administration Dr. Gustavson faced the full range of problems that come with getting a new organization under way: clarifying its purposes, attracting key staff people, establishing policies, launching the program, and establishing its place on the national scene.

To this challenge "Dr. Gus" brought imagination, the wisdom of more than forty years' experience in science and education, an out-giving warmth of personality, and an incredible knack for making the right decision on matters of the first importance. Or, more accurately, helping others to make the right decisions as to fundamental values and directions of growth.

He has led us to regard devotion to objective research as a means of arriving at what is truly in the public interest, to search out the basic problems which underlie more immediately vexing difficulties, to work with a sense of comradeship and accomplishment with scholars and teachers in the universities, to insist on high levels of integrity and competence. Thus to state the aims and established basic policies of RFF is to realize again that they are but expressions of Dr. Gustavson's own character.

RFF, happily, will not lose Dr. Gus, since he will continue as a member of its Board of Directors. He expects to remain active in our affairs; indeed, I have maneuvered shamelessly on numerous occasions to get him committed to this. He and Mrs. Gustavson have moved to Tucson, where he is now professor of chemistry at the University of Arizona. Thus, he is "retiring" to the work he probably loves best—teaching science. Arizona gains a great teacher while we in RFF will miss day-to-day contact with an altogether wonderful friend. His beneficial impact on us and in the field of natural resources to which RFF is devoting its effort will continue and will last.—JOSEPH L. FISHER.

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**RESOURCES FOR THE FUTURE, INC.**  
1145 Nineteenth Street, N.W., Washington 6, D. C.

